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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/019,871 | 12/26/2001 | Marc Viala | 34191 | 8073 |

7590 11/23/2004
Pearne Gordon McCoy & Granger
526 Superior Avenue East Suite 1200
Cleveland, OH 44114-1484

EXAMINER

STREGE, JOHN B

ART UNIT PAPER NUMBER

2625

DATE MAILED: 11/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/019,871

Applicant(s)

VIALA ET AL.

Examiner

John B Strege

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2/19/02.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

The preliminary amendment (received 12/26/01) has been entered. Currently claims 1-12 have been canceled and claims 13-24 are pending.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 13-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Madden et al. USPN 6,249,285 (hereinafter "Madden") in view of Toh USPN 5,537,494.

Claim 13 discloses, "process for measuring three-dimensional objects in a three-dimensional environment, consisting of taking at least one image by at least one camera and creating a representation of the environment based on an analysis of the image, characterized in that the analysis comprises detection of discontinuities in the appearance of the image, a combination of discontinuities detected at geometric contours defined on the image by parameters, an adjustment of contours to discontinuities by varying the parameters, an estimate of the shape and position in the environment of geometric objects projecting onto the image according to the said contours, the representation showing the said objects."

Madden discloses a method for developing an estimation of the structure of a three dimensional scene and camera path from multiple two-dimensional images of the scene (col. 3 lines 10-13). The technique involves displaying a visual representation of

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an estimated three-dimensional scene structure and the values of various parameters associated with the scene, together with a visual representation of at least one two-dimensional image used in the scene structure estimation algorithm (col. 3 lines 13-18). A user inputs information by adjusting parameters and specifying an element or region of the visual representation and supplies information such as attributes for the element or region to be applied during a next iteration of the scene structure estimation algorithm (col. 3 lines 18-23). Madden further discloses that the user may specify the location of planar surfaces (geometric contours) in a sequence of images which are of particular importance (col. 3 lines 58-61). Madden does not explicitly disclose the detection of discontinuities in the appearance of the image, or a combination of discontinuities.

Toh discloses a method to produce three-dimensional information about a scene (at least the last sentence of the abstract). Toh recites an image processing system with an edge detector for detecting edges in a supplied image and for creating an edge map therefrom, and an integrating processor for combining in the edge map data mathematical expressions representing the intensity of image portions between the detected edges, thereby to reduce the amount of data defining the image (col. 3 lines 3-11). These edges that are detected correspond to discontinuities in the intensity profile of the image (col. 5 lines 12-15). Once the data has been reduced it can be used in a wide range of different image processing applications (col. 5 lines 31-33) such as for qualitative shape analysis (col. 6 lines 15-45) or quantitative shape analysis (col. 8 lines 8-45).

At the time of the invention it would have been obvious to one of ordinary skill in the art to combine Madden and Toh to develop the estimation of a structure by detecting discontinuities in the data and combining the discontinuities. The motivation for doing so is that it would reduce the amount of data defining the image and thus speed up the scene analysis performed by Madden. Thus it would have been obvious to one of ordinary skill in the art to combine Madden and Toh to obtain the invention as specified in claim 13.

Regarding claim 14, Madden discloses identifying elements or regions in the image as being straight lines, planes, circles, and other geometric abstractions or pixel regions (paragraph bridging cols. 5-6).

Regarding claim 15, Madden states that the parameters may include positional and type information and lengths of the camera (col. 3 lines 46-57).

Regarding claim 16, Toh discloses the image processing system in which an acquired image is processed to identify edges in the image and to represent the intensity profile of image portions between detected edges as a respective mathematical expression thereby to reduce the amount of data used to define the image (paragraph bridging cols. 2-3).

Regarding claim 17, Toh discloses taking into account the areas of shading, i.e. Varying or constant intensity between the edges (col. 43 lines 49-62).

Regarding claims 18 and 24, Madden discloses estimating camera parameters to provide depth estimates (col. 6 lines 8-22).

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Regarding claim 19, Madden discloses initial estimates of camera positions starting from information input manually (col. 3 lines 10-57).

Regarding claims 20-23, Madden discloses that the scene structure estimation algorithm is re-executed and the process repeats until the user is satisfied with the resulting visual scene structure.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. USPN 5,528,194 discloses a method for performing geometric transformations on an input image (especially see figure 4 and col. 2).

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John B Strege whose telephone number is (703) 305-8679. The examiner can normally be reached on Monday-Friday between the hours of 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached at (703) 308-5246. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JS



BHAVESH M. MEHTA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600